

# STRAINS

## ABSTRACT

### OBJECT OF THE GAME

You are a bacterium and have to make a pattern with YFP, GFP or RFP. Each pattern gives you points based on the complexity of the pattern. The first player to reach 10 points wins.

TIME GOAL: 15-20 minutes

## MATERIALS & METHODS

### CONTENTS

117 Play cards as follows:

22 GFP cards

22 RFP cards

22 YFP cards

1 Kanamycin card

1 Chloramphenicol card

1 Tetracyclin card

1 Ampicillin card

9 Antibiotic resistance cards

6 Virus cards

3 CRISPR-CAS cards

6 AB minimal medium cards

3 Autotrophy cards

6 LVA-tag cards

4 Metabolic Stop cards

4 Tumble cards

6 YAY cards

27 Plasmid cards as follows:

7 3bar cards worth 1 point

10 4bar cards worth 2 points

10 5bar cards worth 3 points

### SETUP

The Plasmid cards are shuffled and put apart from the rest of the deck. 4 Plasmid cards are put on the table, the others are put next to it upside-down. The Plasmid cards contain the sequence with the pattern you have to make (Y-G-R). The other Play cards are put on a DRAW pile. Deleted cards are put on a TRASH pile. Every player gets 5 cards from the DRAW pile. If someone gets an antibiotic card, the card is put back in the middle of the deck and the player gets a new card from the top of the deck. Afterwards, the deck is shuffled again.

## RESULTS

### GAME PLAY

The youngest player starts. A turn consist of two phases: a drawing phase and a play phase.

#### 1. DRAW PHASE

The drawing phase simply consists with picking a card from the DRAW pile.

#### 2. PLAY PHASE

1. If the card is a normal play card, the player is free to choose what to do with his cards. He can play a pattern consisting of fluorescent proteins (FPs) and/or play an Action card. A player can play only one Action card and only one pattern a turn.

### ACTION CARDS

Action cards are cards a player can use in his own turn

1. Virus: the player can draw a card from any player he wants
2. Minimal Medium: the next player has to skip his turn
3. Tumble: this simply reverses direction of play
4. LVA-tag: the player can pick any FP from a pattern and put it on the TRASH pile, this leaves a hole in the pattern, ready to be filled in by the player or his competitors
5. YAY: When someone dies, you can play this card to take any card of choice of the dead player.
6. Metabolic STOP: the player can give this card to any player of choice. The targeted player can not play any pattern until the STOP card is lifted. A STOP card can be lifted by playing a Resistance card or if a pattern is played.

### COUNTER ACTION CARDS

Counter action cards are cards which a player can use in another players turn

1. CRISPR-CAS: when another player plays the virus cards and wants to draw a card from the player, the targeted player can use the CRISPR-CAS card. This makes the player immune for the Virus card and the other player's turn has ended.
2. Autotrophy: when another player plays the AB minimal medium card, the player which is targeted by this card, can use the Autotrophy card. The player is immune for the effect and does not have to skip his turn.
3. Resistance card: this card has a double function: it can lift a STOP card, but it also protects against antibiotic cards.

Used ACTION CARDS are put on the TRASH pile after use.

2. If the drawn card is an Antibiotic card, the player has to play its Antibiotic Resistance card and his turn is over. The Antibiotic Resistance card is then placed on the TRASH pile. If the player is unable to play an Antibiotic Resistance card, the player dies. This means he has to put his cards on the table, so everybody can see them. Every player with a YAY card can change the YAY card for a card of choice of the dead player. The next player has the first

choice. After everybody has had the possibility to take a card, the remaining cards of the dead player are put on the TRASH pile together with the highest PLASMID card.

## **CONCLUSION**

### **SCORING**

A player gains points by playing patterns from his Plasmid card. These patterns start from 3 FP cards. The points for each pattern are displayed on the Plasmid card. When the player has finished a pattern, he takes the Plasmid card from the Plasmid area and a new Plasmid card is revealed. Patterns are built on existing patterns and have to be linear and in the right direction. Patterns can only be played completely, it is not allowed to play parts of a pattern.

Another restriction is that the pattern has to fit on the table. FP cards can not be played over each other and can not leave the table. Like every bacterium, the player has to stay in the confined area or petri dish.

## **REFERENCES**

This game was made possible by the iGEM 2015 KU Leuven Team and by Inkscape.

## **FIN**